

NOTE ON THE NUMBER OF SPIRACLES IN MATURE CHALCID LARVÆ.

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During a recent trip to Washington, D. C., while discussing the life history of *Prospaltella perniciosi* Tower a chalcid parasitic on the San Jose Scale, *Aspidiotus perniciosus* Comst., with Mr. J. C. Crawford of the National Museum, he called my attention to a translation of a Russian work published in 1912 entitled, Parasitic and Hyperparasitic Insects, by Iv Chewyreyev, and in particular to a statement made by the author on page 16, which is quoted in full: "In the same paper the author named gave* (25, 35) a much enlarged drawing of *Dibrachys boucheanus* Rtz. This figure shows not a single spiracle, as if the larva has not got them. While as a matter of fact it does have them, and under the magnification it was drawn, they must be quite evident; nothing is said about spiracles in the description either. The fact is that the arrangement of spiracles in mature chalcid larvæ is very peculiar and as will be shown later, makes it possible to recognize them at once and to distinguish them from the larvæ of allied families. They have nine pairs of spiracles, two of which are on the meso- and metathorax and the rest on the first seven abdominal segments; hence, there are no spiracles on the prothorax and last two abdominal segments. This is the peculiarity Howard did not bring out in his drawing which is therefore incorrect."

The statement made in the above quotation that all mature chalcid larvæ have nine pairs of spiracles does not hold true in the case of *Prospaltella perniciosi*, for the adult larva of this chalcid has only eight pairs of spiracles, two pairs of which are thoracic and six pairs abdominal.

In tracing the tracheal system of this scale parasite through its two larval forms, one finds the tracheal system to consist in the first larval stage of two longitudinal main trunks lying near the surface, one on either side, each bearing ten short, stub-like

* (25, 35) refers in the author's bibliography to Dr. L. O. Howard's paper, "A Study on Insect Parasitism"—U. S. Dept. Agri., Div. Ent. Techn. Ser. No. 5, p. 35, 1897.

branches. During the growth of this form the two longitudinal main trunks join anteriorly and posteriorly, forming an oval. Spiracles are not developed during this stage.

In the second larval stage the tracheal system is at first similar to that of the mature first stage larva, except that it lies deep within the body of the larva. As this larval form grows the first, second and fourth to ninth inclusive short branches of each longitudinal main trunk grow rapidly and terminally at the surface of the body develop spiracles during the last stages of this instar. The third and tenth branches remain short and do not develop spiracles.

The above shows the manner in which the eight pairs of spiracles originate, thus proving that the statement made by Iv Chewyreuv does not hold true.